Space Weather Forecast

Issued on Saturday, 21 September 2024 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate flares (R1/R2 Radio Blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only occasional common class flares observed, the largest from the region just west of the north-centre disc. This, along with another nearby region saw the most notable growth, but are now maturing into relatively simple magnetic configurations. However, there remains a weak mixed polarity spot on the leader of the common class flaring spot. There are seven regions in total on the Earth-facing disc, with the next most complex spot in the southeast, however this has seen ongoing development and decay of surrounding peripheral spots. A further region in the southwest disc, which was the source of a Strong flare on 14 Sep, continues to decline. The other regions are small and simple

No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: Slow wind conditions persisted. Solar wind speeds eased from slightly elevated to be at background. Interplanetary Magnetic Field was weak throughout, with north-south component fluctuating between being weakly northward and southward directed. Geomagnetic activity was mostly Quiet (Kp 0-2), but saw one interval of Active (Kp4) 21/2100-0000 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remains at background.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Slightly elevated solar winds are expected to ease to mainly background. Chance of slight enhancement day 2-3 (22-23 Sep) from any interaction with the faster solar winds from a small coronal hole in the northwest. Further enhancement then possible late on day 4 (24 Sep) from another fast wind enhancement from a further coronal hole. Mainly Quiet activity forecast (Kp 0-2) with isolated Unsettled (Kp 3) intervals and a slight chance of a spell of Unsettled to Active (Kp 3-4) late day 2 or day 3. Any onset of the fast winds at the end of day 4 will bring a slight chance of Active to G1 Minor Storms (Kp4-5).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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